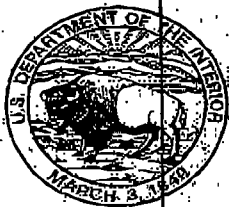


Appendix F U.S. Fish and Wildlife Service Biological Opinion



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In Reply Refer To:
1-1-05-F-0158

Mr. Gene Fong
Federal Highway Administration
Department of Transportation
650 Capital Mall, Suite 4-100
Sacramento, California 95814

JUN 13 2005

Subject: Biological Opinion on the Proposed State Route 4 (east) from Loveridge Road to State Route 160 Widening Project in Contra Costa County, California

Dear Mr. Fong:

This is in response to your June 7, 2005, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route 4 (east) widening from Loveridge Road to State Route 160 in Contra Costa County, California. Your request was received in this office on June 9, 2005. This document represents the Service's biological opinion on the effects of the action on the threatened California red-legged frog (*Rana aurora draytonii*). This document is issued pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The proposed State Route 4 project is not likely to adversely affect the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) and the threatened giant garter snake (*Thamnophis gigas*) due to an apparent lack of suitable habitat for these two listed animals in the action area.

This biological opinion is based on: (1) a letter from the Federal Highway Administration to the Service dated June 9, 2005; (2) *Natural Environmental Study/Biological Assessment State Route 4 (east) Widening Project Loveridge Road to State Route 160* 04-CC-4 KP7.8/R47.6 (PM2.5/R29.6) EA 04275-228500 (Biological Assessment) dated March 2004 that was prepared by Parsons; (3) a visit to the project site on April 1, 2005, by Chris Nagano of the Service, John Cleckler detailee from the California Department of Transportation (Caltrans) to Service, and representatives from Caltrans, the County of Contra Costa, and Parsons; (4) An April 22, 2005, letter from the Service to the Federal Highway Administration; (5) Several telephone calls between the Service and Parsons regarding the location where a frog and suitable California red-legged frog habitat were observed at West Antioch Creek on the April 1, 2005, field meeting; (6) an electronic mail message from Kate Lewis of Parsons to David Yam of Caltrans dated May 1,

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Mr. Gene Fong

2

2005, that contained the amount of permanent and temporary effects to the upland habitat of the California red-legged frog at West Antioch Creek; (7) a meeting between David Yam and Chris Nagano regarding the effects to the California red-legged frog and appropriate compensation for the proposed project; (8) Addendum to the Natural Environment Study/Biological Assessment prepared by Parsons and electronically mailed on June 3, 2005; and (9) other information available to the Service.

CONSULTATION HISTORY

- May 3, 2004: The Service received the *Natural Environmental Study/Biological Assessment State Route 4 (east) Widening Project Loveridge Road to State Route 160 04-CC-4 KP7.8/R47.6 (PM2.5/R29.6) EA 04275-228500*.
- April 1, 2005: Chris Nagano and John Cleckler, and representatives from Caltrans, the County of Contra Costa, and Parsons met at the proposed project site. Mr. Nagano observed a medium-sized frog in West Antioch Creek on the north side of State Route 4, and the Caltrans representative observed a frog in West Antioch Creek on the south side of State Route 4; suitable aquatic and upland habitat for the California red-legged frog was observed along West Antioch Creek on the north and south sides of State Route 4.
- April 22, 2005: The Service sent a letter to the Federal Highway Administration requesting additional information on the proposed project.
- April 28, 2005 to May 23, 2005: Several telephone conversations between the Service and Parsons regarding the location where the frogs and the California red-legged frog habitat was observed at West Antioch Creek on the April 1, 2005, field meeting.
- May 1, 2005: Kate Lewis of Parsons sent an e-mail to David Yam of Caltrans dated May 1, 2005, that contained the amount of permanent and temporary effects to the upland habitat of the California red-legged frog at West Antioch Creek.
- June 1, 2005: Chris Nagano of the Service met with David Yam of Caltrans regarding the effects to the California red-legged frog and appropriate compensation for the proposed project.

BIOLOGICAL OPINION

Description of Proposed Action

It is our understanding, the proposed project is located on State Route 4 from approximately 0.81 mile west of the Loveridge Road interchange to 0.77 mile east of the Hillcrest Avenue interchange in the City of Antioch in Contra Costa County, California. The proposed action consists of the doubling of available lanes from four to eight, reconstruction of five interchanges;

Mr. Gene Fong

3

widening the median for the entire project segment; widening of pedestrian undercrossings; extending box culverts at Kirker Creek, West Antioch Creek, and the Los Medanos; widening of a utility undercrossing at Century Boulevard; and the relocation of a pump station at Loveridge Road.

Construction of the proposed project is expected to begin in 2007 and extend to 2013. The construction primarily will take place during the daylight hours, but some nighttime work will occur to avoid interference with highway traffic.

Avoidance and Conservation Measures

According to the Biological Assessment, the June 1, 2005, meeting between the Service and David Yarn of Caltrans, the Addendum to the Biological Assessment and other information available to the Service, Caltrans proposes to avoid, minimize, and compensate for effects to the California red-legged frog through the following measures (several of these measures are being implemented for effects to wetlands and other wildlife, but will serve as conservation measures for the listed amphibian):

1. Construction activities in streambeds will be restricted to the dry season.
2. Creek flow will not be impeded.
3. A high visibility construction fence outlining environmentally sensitive areas (ESA) will be installed as a first order of work and will remain until job completion. No work, storage, or other activities shall occur within an ESA.
4. The equipment staging area will be on State Route 4 or on the property outside of the U.S. Army Corps of Engineer's jurisdiction.
5. A coffer dam and corrugated steel pipe, sized at about 48 inches in diameter for dry-season flows, will be installed with clean gravel and filter fiber. The coffer dam, filter fiber, and corrugated steel pipe will be removed from the creek bed after completion of the project.
6. Landscape trees growing on top of the culvert will be cut down, rather than bulldozed or pulled out.
7. Excavated materials will be disposed of at an approved disposal site.
8. The Contractor shall furnish a permitted Biological Monitor. The permitted Biological Monitor shall be permitted by the Service to handle listed species, specifically the California red-legged frog. The permitted Biological Monitor shall also hold a California Department of Fish and Game Scientific Collection Permit for handling general wildlife species, common to coastal scrub and riparian habitats of the San Francisco Bay Area, that might be expected in the project vicinity and any additional written permits or

Mr. Gene Fong

4

Memorandum of Understanding (MOUs) from the California Department of Fish and Game for the 'Species of Special Concern'.

9. A general Biological Monitor may be used instead of the permitted Biological Monitor for onsite monitoring in certain instances as specified below. The general Biological Monitor shall possess a 4-year college degree in Biology or Environmental Sciences, a minimum of one year's experience in biological wildlife surveys or wildlife monitoring, and shall hold a California Department of Fish and Game Scientific Collection Permit for handling general wildlife species, common to coastal scrub and riparian habitats of the San Francisco Bay Area, that might be expected in the project vicinity. In addition, the general Biological Monitor shall also be able to identify the California red-legged frog.
10. The permitted Biological Monitor shall be on site during the installation of perimeter barriers (Type Frog) and temporary fence (Type ESA), and during any clearing and grubbing activities to ensure work areas are clear of listed species. During these activities, the permitted Biological Monitor shall conduct monitoring in the area where work is scheduled prior to the initiation of each construction work shift and visually survey the entire area, where fences are to be installed or removed, and where clearing and grubbing activities are to take place. The monitoring shall consist at a minimum of the following activities: (1) visual surveys of the entire area focusing on the immediate area where work is proposed for that shift; (2) inspecting under rocks, wood, or other debris; (3) inspecting under and in construction equipment and stored materials; (4) probing and shaking of vegetation to flush wildlife. Tools such as, but not limited to, a spotlight and a wooden stick for probing vegetation and litter may be used during the monitoring process. During the fencing and clearing and grubbing work shifts, the permitted Biological Monitor shall continue to monitor the area for the California red-legged frog. If any barrier or fence is found not to be in good condition, the permitted Biological Monitor shall immediately inform the Resident Engineer and Contractor, and corrective action shall be taken immediately by the Contractor. The permitted Biological Monitor shall make a final visual survey of all fences and barriers at the beginning of each work day during these phases of construction to ensure the integrity of the fence and barrier lines such that wildlife will not be able to enter the construction area between work shifts.
11. The general Biological Monitor shall conduct monitoring prior to the initiation of each construction work shift in active construction work areas at West Antioch Creek, routinely at the beginning of the work shift. This Biological Monitor shall perform the following tasks: (1) monitoring of ESAs, fencing, perimeter barriers, and silt fences throughout the entire project site, and (2) monitoring of active construction zones to ensure work areas are clear of listed species, species of special concern, and other general wildlife that might enter the construction zone. If any fence or barrier is found not to be in good condition, the Biological Monitor shall immediately inform the Resident Engineer and Contractor, and the Contractor shall take immediate corrective action.
12. A Biological Monitor must be on-call and capable of responding to the work site within

Mr. Gene Fong

5

one (1) hour.

13. Biological Monitors shall maintain monitoring records that include: (1) the beginning and ending time of each day's monitoring effort; (2) a statement clearly stating whether specified species, or any other general wildlife species, were encountered, including the time and location when such species were found; (3) the time the specimen was identified and by whom and its condition; (5) condition of the barriers and fences; and (6) a description of any actions taken. The Biological Monitors shall maintain complete records in their possession while conducting monitoring activities and shall immediately surrender records to the Resident Engineer upon request. All monitoring records shall be provided to the Resident Engineer upon completion of the monitoring work.
14. When any frog is encountered by a Biological Monitor or Contractor's personnel, construction activities in the immediate area (within a 15-meter radius) of where the frog is found shall be immediately halted. If encountered by the Contractor's personnel, the Resident Engineer and onsite Biological Monitor shall be immediately notified. If encountered by the Biological Monitor, the Resident Engineer and Contractor shall be immediately notified. If the permitted Biological Monitor is not present when a frog is encountered, the general Biological Monitor shall immediately notify the permitted Biological Monitor.
15. If the general Biological Monitor is not authorized by the Service to handle the California red-legged frog, any individual frog encountered on the project site shall be protected, at the location where encountered, underneath an inverted 5-gallon white plastic bucket until the permitted Biological Monitor arrives at the site to identify the specimen to species. The bucket shall have a minimum of six (6) 15 mm holes drilled in the bottom for ventilation. The bucket shall be shaded and damp material inserted if necessary to ensure that the frog does not become overheated and dehydrated or desiccated. Under no circumstances shall the frog be left under the bucket for more than three (3) hours. The permitted Biological Monitor shall come immediately to the project site in order to confirm whether or not the specimen is a California red-legged frog. The permitted Biological Monitor, in accordance with Service guidelines, shall move any live California red-legged frog encountered within the construction zone a minimum of 100 meters from the construction zone. The relocation site shall be determined prior to commencement of conservation activities. Injured or dead California red-legged frogs shall be handled only by the permitted Biological Monitor as prescribed in the Service permit.
16. In addition, any injured or dead California red-legged frogs found or any unanticipated damage to the species habitat occurring due to construction activities, shall be reported immediately to the on-site Biological Monitor and the Resident Engineer. The Biological Monitor shall: (1) notify the Service within 24 hrs, and (2) prepare a written report (separate from monitoring report as described elsewhere in these special provisions) by the end of the work shift and submit the report to the Resident Engineer. The written report shall include the following information, as a minimum: the date, time, precise location of the specimen/incident, and any other pertinent information.

Mr. Gene Fong

6

17. The permitted Biological Monitor shall conduct a pre-construction employee education program for Contractor and State personnel prior to the start of construction. All Contractor personnel working on the project shall attend the program. An education program shall also be provided for all new personnel and substitutes brought onto the job after the pre-construction employee education program who have not previously had the training. The employee education program shall include: (1) descriptions of the California red-legged frog, (2) photographs of all the frog species that might be found in the area, and (3) information regarding the duties of the permitted Biological Monitor and, if applicable, the general Biological Monitor. Contact information for each Biological Monitor shall be provided to all Contractor employees and shall direct the employees to immediately notify the on-site Biological Monitor should a Contractor employee encounter a California red-legged frog or species of similar appearance during the progress of the work.
18. California red-legged frog photo identification cards and information sheets shall be passed out to all workers. An 8.5-inch x 11-inch information fact sheet for the California red-legged frog and a laminated pocket-size California red-legged frog ID card shall be passed out to workers during the pre-construction education program. The information fact sheet shall contain descriptive species identification and habitat information including color photographs of the California red-legged frog, the common bullfrog, and the common tree frog. The frog ID card shall contain a color photo of the California red-legged frog on one side and California red-legged frog identification information on the other side.
19. Activities shall cease until appropriate corrective measures have been completed.
20. All sightings of any incidental take shall be reported the Service immediately by telephone.
21. The Biological Assessment stated that the approximately 0.47 acres of wetlands that will be affected temporarily or permanently by the proposed project will be mitigated for at a 1:1 or 2:1 ratio. The preferred method of mitigation is through the purchase of credits from an established conservation bank.
22. According to the June 1, 2005, meeting, there will be permanent effects to 1.42 acres of upland habitat and 1.04 acres of temporary effects. The permanent effects will be compensated for at a 2:1 ratio (2.84 acres) and areas subject to temporary effects will be restored.

STATUS OF SPECIES/ENVIRONMENTAL BASELINE

The California red-legged frog was listed as a threatened species on May 23, 1996, (U.S. Fish and Wildlife Service 1996). Please refer to the final rule and the *Recovery Plan for the California Red-Legged Frog (Rana aurora draytonii)* (U.S. Fish and Wildlife Service 2002) for additional information on this species.

Mr. Gene Fong

This species is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 1985). The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 1985), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

California red-legged frogs have paired vocal sacs and vocalize in air (Hayes and Krempels 1986). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on the surface of the water (Hayes and Miyamoto 1984). California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities (Storer 1925). Individuals occurring in coastal drainages are active year-round (Jennings et al. 1992), whereas those found in interior sites are normally less active during the cold season.

The historic range of the red-legged frog extended coastally from the vicinity of Elk Creek in Mendocino County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The California Red-legged frog was historically documented with 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (U.S. Fish and Wildlife Service 2002). Red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the central coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (California Department of Fish and Game 2002).

Adult California red-legged frogs prefer dense, shrubby or emergent riparian vegetation closely associated with deep (>2.3 feet), still, or slow-moving water (Hayes and Jennings 1988). However, frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. The largest densities of California red-legged frogs currently are associated with deep pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). California red-legged frogs disperse upstream and downstream of their breeding habitat to forage and seek sheltering habitat.

During other parts of the year habitat includes nearly any area within 1-2 miles of a breeding site that stays moist and cool through the summer (Fellers 2005). According to Feller (2005), this includes coyote bush (*Baccharis pilularis*) California blackberry thickets (*Rubus ursinus*), and root masses associated with willow (*Salix* species) and California bay trees (*Umbellularia californica*). Sometimes the non-breeding habitat used by California red-legged frogs is extremely limited in size, for example, a 6-foot wide Coyote bush thicket growing along a tiny intermittent creek surrounded by heavily grazed grassland (Feller 2005). Sheltering habitat for California red-legged frogs is potentially all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris.

Mr. Gene Fong

Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay ricks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adult frogs are often associated with permanent bodies of water. Some frogs remain at breeding sites all year while others disperse. Dispersal distances are typically less than 0.5 mile, with a few individuals moving up to 1-2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005). Dispersing frogs in northern Santa Cruz County traveled distances from 0.25 mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger, unpublished data).

Egg masses contain about 2,000 to 5,000 moderate sized (0.08 to 0.11 inches in diameter), dark reddish brown eggs and are typically attached to vertical emergent vegetation, such as bulrushes (*Scirpus* spp.) or cattails (Jennings *et al.* 1992). California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Eggs hatch in 6 to 14 days (Jennings 1988). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992); eggs exposed to salinity levels greater than 4.5 parts per thousand results in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1990). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). Sexual maturity normally is reached at 3 to 4 years of age (Storer 1925; Jennings and Hayes 1985). California red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations of California red-legged frogs fluctuate from year to year. When conditions are favorable California red-legged frogs can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, California red-legged frogs may temporarily disappear from an area when conditions are stressful (e.g., drought).

The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food items. Vertebrates, such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*), represented over half the prey mass eaten by larger frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal. Feeding activity probably occurs along the shoreline and on the surface of the water (Hayes and Tennant 1985). The diet of California red-legged frogs apparently has not been studied, but their diet probably is similar to other ranid frogs that feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b).

Mr. Gene Fong

9

Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (*Rana catesbeiana*) (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish including sunfish (*Lepomis* spp.), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*) (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range.

Several researchers in central California have noted the decline and eventual disappearance of California red-legged frog populations once bullfrogs became established at the same site (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). This has been attributed to both predation and competition. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora aurora*), and suggested that bullfrogs could prey on subadult northern red-legged frogs as well. In addition to predation, bullfrogs may have a competitive advantage over California red-legged frogs; bullfrogs are larger, possess more generalized food habits (Bury and Whelan 1984), have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977), and larvae are unpalatable to predatory fish (Kruse and Francis 1977). In addition to competition, bullfrogs also interfere with California red-legged frog reproduction. Both California and northern red-legged frogs have been observed in amplexus with (mounted on) both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; M. Jennings, in litt. 1993; R. Stebbins in litt. 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat. The urbanization of land within and adjacent to California red-legged frog habitat has also impacted California red-legged frogs. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks California red-legged frog dispersal, and the introduction of predatory fishes and bullfrogs. This report further identifies the conversion and isolation of perennial pool habitats resulting from urbanization as an ongoing impact to California red-legged frogs.

Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frog (*Rana aurora aurora*) infected with an iridovirus, which also was presented in sympatric three-spined sticklebacks (*Gasterosteus aculeatus*) in northwestern California. Ingles (1932a, 1932b, and 1933 cited in Fellers 2005) reported four species of trematodes from California red-legged frogs, but he later synonymized two of them.

The recovery plan for the California red-legged frog identifies eight recovery units. Each recovery unit reflects areas with similar conservation needs. The strategy for recovery of California red-legged frogs includes promoting and protecting populations that are geographically distributed in a manner that allows for the continued existence of viable metapopulations. The California red-legged frog has been extirpated or nearly extirpated from over 70 percent of their former range. Historically, this species was found throughout the Central Valley and Sierra Nevada foothills. As of 1996, California red-legged frogs have been documented in approximately 240 streams or drainages from 23 counties, primarily in central coastal California. Monterey, San Luis Obispo, and Santa Barbara counties support the largest

Mr. Gene Fong

10

extent of currently occupied habitat. The most secure aggregations of California red-legged frogs are found in aquatic sites that support substantial riparian and aquatic vegetation and lack non-native predators.

This project is located within the East San Francisco Bay Recovery Unit, which extends from the northernmost portion of Contra Costa County, includes a portion of San Joaquin County south to Santa Clara County, includes the eastern portion of San Mateo County, and all of San Francisco County (U. S. Fish and Wildlife Service 2002). Contra Costa and Alameda counties contain the majority of known California red-legged frog localities within the eastern San Francisco Bay area. Within this recovery unit, the listed amphibian seem to have been nearly eliminated from the western lowland areas near urbanization, they still occur in isolated populations in the East Bay Foothills (between Interstate 580 and Interstate 680), and are abundant in several areas in the eastern portions of Alameda and Contra Costa counties. This recovery unit is essential to the survival and recovery of California red-legged frogs, as it contains the largest number of occupied drainages in the northern portion of its range. There is a breeding population at Black Diamond Mines Regional Park (U.S. Fish and Wildlife Service 2002).

There are several recent sightings of the California red-legged frog in the vicinity of the action area and throughout the region south of Antioch and Pittsburg (California Department of Fish and Game 2004). Adult California red-legged frogs are highly mobile and may move considerable distances from their breeding ponds. Areas containing aquatic and upland habitat exist within and adjacent to the action area; and a medium sized frog of an unidentified species was observed at West Antioch Creek (Nagano pers. obs. April 2005). The action area contains components that can be used by the California red-legged frog for feeding, resting, mating, movement corridors, and other essential behaviors. Therefore, the Service believes that the California red-legged frog is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as the nearby recent observations of this listed species.

Effects of the Proposed Action

The proposed State Route 4 Project likely will result in a number of adverse effects to California red-legged frog. There is a likelihood the animals may be affected by being crushed, entombed, hit and injured or killed by vehicle strikes, poisoned by chemical agents, trapped in erosion control netting, or harassed by noise and vibration. Individuals exposed during excavations likely will be crushed and killed or injured by construction-related activities. California red-legged frogs could fall into the trenches, pits, or other excavations, and then they could be directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation. The amphibians could be subject to increased levels of harassment resulting from lights used during night time construction. Edible trash left during or after repair activities could attract predators, such as raccoons (*Procyon lotor*) and crows (*Corvus corax*) to the sites, who could subsequently prey on the listed amphibian. California red-legged frogs may become trapped if plastic monofilament netting is used for erosion control or other purposes where they would be subject to death by predation, starvation, or desiccation (Stuart *et al.* 2001). The increased width of the

Mr. Gene Fong

11

road and higher levels of vehicle traffic will result in higher numbers of California red-legged frog killed during their movements between their upland habitat and breeding ponds.

Temporary effects are project activities that temporarily remove one or more essential components of the habitat of a listed species, but can be restored to pre-project conditions of equal or greater habitat value. In order for the effects to be considered temporary, the affected habitat of the listed species must be totally restored within two seasons. Ground disturbance resulting from the proposed State Route 4 Project includes substantial grading, excavating, and fill. The Caltrans is considering the adverse effects of a significant amount of cut and fill of earth, a maximum of 1.04 acres, to be of a temporary nature. These activities have potential to cause injury and mortality to individual California red-legged frogs occupying the action area. As part of the project description, the Caltrans has stated upon completion of the project, they will restore temporary disturbed areas to promote restoration to pre-project conditions. The temporary effects will result in the permanent loss of the habitat utilized by the California red-legged frog unless the restoration implemented by Caltrans is adequately planned, utilizes native California plant species collected in the immediate area of the proposed project, and meets specific success criteria.

The amount of wetlands and other Waters of the United States at West Antioch Creek that will be permanently affected is 0.1518 acre and 0.0208 acre will be temporarily affected by the proposed State Route 4 project; there will be permanent effects to 1.42 acres of upland habitat and 1.04 acres of temporary effects. The permanent effects to the upland habitat will be compensated for at a 2:1 ratio (2.84 acres) and the areas subject to temporary effects will be restored.

Construction equipment that has been used in different areas and with different species of amphibians including the California red-legged frog may transmit diseases by introducing contaminated soil and other material on the equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytrid fungus may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (e.g., water pH) that reduce normal immune response capabilities (Bosch *et al.* 2000).

Construction related activities are likely to cause disruption of surface movement, disruption or complete loss of reproduction, harassment from increased human activity, and permanent and temporary loss of shelter. Because these animals are nocturnal, if construction is performed at night, associated lighting likely would increase all of the above effects. Wise and Buchanan (2002) reviewed the adverse effects that may result from night time illumination on salamander species. Artificial lighting used during night time construction may increase predation of the California red-legged frog, if it occurs during periods of fall, winter, or spring rains, because the amphibians will lose the cover of darkness for movement. Nocturnal foraging by this listed animal may be affected by artificial lighting.

The loss of ground squirrel burrows and other dry season retreats will reduce the amount of

Mr. Gene Fong

12

available upland habitat within the action area. The loss of the portion of West Antioch Creek where the on and off ramps will be constructed will result in reduced breeding opportunities for the California red-legged frog. The addition of impermeable surfaces resulting from the two freeway ramps will be accompanied by an increase in chemical runoff, which would include gasoline and oil, as well as silt runoff, which will reduce water quality in the project site.

The effect of habitat fragmentation on the California red-legged frog is potentially significant. Fragmentation can have two effects: (1) reduction in access to habitat as well as habitat suitability, and (2) disruption of movements, dispersal, and gene flow. The construction of the freeway ramps through listed frog habitat may restrict or block movement between West Antioch Creek and upland habitat. The likelihood of this effect will increase with larger road size, higher traffic volume, and the presence of fences or median barriers. In addition to limiting access to West Antioch Creek or upland habitat, roads also may reduce the suitability of habitat for the California red-legged frog by fragmentation into patches too small for effective use by the animals. As a habitat patch decreases in size, the number of individuals of this threatened animal the patch can support also decreases. This increases the probability that the animals will be extirpated from each habitat patch. The possibility for recolonization will depend upon the nature of the factors, e.g., roads, canals, development, etc., that are causing the fragmentation.

Fragmentation factors that effectively isolate patches and limit access also constitute barriers to California red-legged frog dispersal, and gene flow. Movements and dispersal corridors between breeding and upland habitat are critical to this animal's population dynamics, particularly because the animals currently persist as metapopulations with multiple disjunct population centers. Movement and dispersal corridors likely are important for alleviating over-crowding during years when California red-legged frog abundance is high, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects.

Roads have been documented as barriers to movements by a diversity of species, and this effect varies with road size and traffic volume. The inhibition of animal movements caused by roads produces a significant effect by fragmenting habitats and populations (Joly and Morand 1997). Roads were found to be significant barriers to gene flow among common frogs (*Rana temporaria*) in Germany and this has resulted in genetic differentiation among populations separated by roads (Reh and Seitz 1990). Similarly, significant genetic subdivision was detected in bank voles (*Clethrionomys glareolus*) populations separated by a 164 foot wide highway in Germany (Gerlach and Musolf 2000).

California red-legged frog mortality and injury occurs when the animals attempt to cross roads and are hit by cars, trucks, or motorcycles. The majority of strikes occur when the animals are moving to their breeding habitat. Thus, vehicle strikes are a direct source of mortality for the California red-legged frog. If vehicle strikes are sufficiently frequent in a given locality, this could result in reduced abundance of this animal. Especially problematic is the death of females prior to the laying of their eggs because this could result in the loss of an entire cohort, and

Mr. Gene Fong

13

therefore, reduced recruitment of new individuals into the population.

Vehicles constitute a consistent source of mortality for the animal, based on the frequency with which vehicle strikes occur. Vehicular usage on California roads is increasing rapidly and directly with human population and urban expansion. During November 2002, California's estimated total vehicular travel on State highway system roads alone was 14.27 billion miles (this figure and subsequent vehicular-use data from Caltrans' Internet website which was accessed on January 2, 2003). From 1972 to 2001, State highway system total vehicular usage rose steadily from 67.11 to 167.81 billion miles annually. For the 23 California counties in which the California red-legged frog may occur, State highway system total annual vehicular usage in 1999, 2000, and 2001 was 53.27, 55.85, and 57.21 billion miles, respectively. The steady increase of vehicular use is thus continuing. We believe such figures illustrate (1) the general increase in vehicular usage that has been, and is still, occurring in many parts of the California red-legged frog's range, and (2) that additional increments of road-kill losses, which are already a potentially serious problem for the species, are likely occurring.

Vehicle-related mortality has significantly affected other listed or rare species. Rudolph *et al.* (1999) estimated that road-associated mortality may have depressed populations of Louisiana pine snakes (*Pituophis ruthveni*) and timber rattlesnakes (*Crotalus horridus*) by over 50% in eastern Texas, and this mortality may be a primary factor in local extirpations of this species of rattlesnake (Rudolph *et al.* 1998). Mortality from vehicles also is contributing to the reduction in the status of the prairie garter snake (*Thamnophis radix radix*) in Ohio (Dalrymple and Reichenbach 1984), and was a limiting factor in the recovery of the endangered American crocodile (*Crocodylus acutus*) in Florida (Kushland 1998).

The presence of roads in an area could result in the introduction of chemical contaminants to the site. Contaminants could be introduced in several ways. Substances used in road building materials or to recondition roads can leach out or wash off roads adjacent habitat. Vehicle exhaust emissions can include hazardous substances which may concentrate in soils along roads. Heavy metals such as lead, aluminum, iron, cadmium, copper, manganese, titanium, nickel, zinc, and boron are all emitted in vehicle exhaust (Trombulak and Frissell 2000). Concentrations of organic pollutants (e. Dioxins, polychlorinated biphenyls) are higher in soils along roads (Benfenati *et al.* 1992). Ozone levels are higher in the air near roads (Trombulak and Frissell 2000). Vehicles may leak hazardous substances such as motor oil and antifreeze. Although the quantity leaked by a given vehicle may be minute, these substances can accumulate on roads and then get washed into the adjacent environment by runoff during rain storms. An immense variety of substances could be introduced during accidental spills of materials. Such spills can result from small containers falling off passing vehicles, or from accidents resulting in whole loads being spilled. Large spills may be partially or completely mitigated by clean-up efforts, depending on the substance.

California red-legged frogs using areas adjacent to roads could be exposed to any contaminants that are present at the site. Exposure pathways could include inhalation, dermal contact, direct ingestion, ingestion of contaminated soil or plants, or consumption of contaminated prey. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in

Mr. Gene Fong

reduced productivity or mortality. Carcinogenic substances could cause genetic damage resulting in sterility, reduced productivity, or reduced fitness among progeny. Contaminants also may have the same effect on California red-legged frog prey species. This could result in reduced prey abundance and diminished local carrying capacity for this listed amphibian.

Little information is available on the effects of contaminants on the California red-legged frog. The effects may be difficult to detect. Morbidity or mortality likely would occur after the animals had left the contaminated site, and more subtle effects such as genetic damage could only be detected through intensive study and monitoring.

Construction of roads can facilitate the invasion and establishment by species not native to the area. Disturbance and alteration of habitat adjacent to roads may create favorable conditions for non-native plants and animals. These exotic species can spread along roadsides and then into adjacent habitat. Non-native animals may use modified habitats adjacent to road to disperse into California red-legged frog habitat. They could compete with California red-legged frogs for resources such as food or burrows, or directly injure or kill the threatened amphibian. Non-native plants and animals may reduce habitat quality for this frog species or their prey, and reduce the productivity or the local carrying capacity for the threatened animal.

Disturbed areas adjacent to roads provide favorable habitat conditions for a number of non-native plant species. Some of these taxa are aggressively invasive and they can alter natural communities and potentially affect habitat quality. A problematic species within the range of the California red-legged frog is yellow star thistle (*Centaurea melitensis*). Dense stands of this plant can form along roadsides and then spread into adjacent habitat. This plant displaces native vegetation, competes with native plants for resources, does not appear to be used by California red-legged frog prey, exhibits dense growth, and may be difficult for the listed amphibian to move through due to its large size (up to 3.3 feet tall), and numerous sharp spines. Other species that may disperse along roads and invade adjacent habitat include mustards (*Brassica* species) and Russian thistle (*Salsola tragus*) (Tellman 1997).

Negative effects to wildlife populations from roads may extend some distance from the actual road. The phenomenon can result from any of the effects already described in this biological opinion (e.g. vehicle-related mortality, habitat degradation, invasive exotic species, etc.). Forman and Deblinger (1998) described the area affected as the "road effect" zone. Along a 4-lane road in Massachusetts, they determined that this zone extend for an average of approximately 980 feet to either side of the road for an average total zone width of approximately 1970 feet. However, in places they detected an effect > 0.6 mile from the road. Rudolph *et al* (1999) detected reduced snake abundance up to 2790 feet from roads in Texas. They estimated snake abundance out to 2790 feet, so the effect may have been greater. Extrapolating to a landscape scale, they concluded the effect of roads on snake populations in Texas likely was significant, given that approximately 79% of the land area of the Lone Star State is within 1640 feet of a road. The "road-zone" effects can be subtle. Van der Zandt *et al* (1980) reported that lapwings (*Vanellus vanellus*) and black-tailed godwits (*Limosa limosa*) feeding at 1575-6560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep (*Ovis canadensis*) increases near roads (MacArthur *et al*.

Mr. Gene Fong

15

1979). Trombulak and Frossell (2000) described another type of "road-zone" effect. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads, and elevated levels of metals in both soil and plants were detected at ≥ 660 feet of roads. The "road-zone" apparently varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the effect zone along primary roads of 1000 feet in woodlands, 1197 feet in grasslands, and 2657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The "road zone" and the California red-legged frog has not been adequately investigated; however, it is possible it exists given the effects of roads on the animal.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

From 1995 to 2020, the human population is projected to increase by 18 percent for the San Francisco Bay hydrologic region, while at the same time agricultural crop land use in the region is projected to remain around 65,000 acres (California Department of Water Resources 1998). According to the California Department of Forestry, from 2000 to 2020, the human population within counties in the Bay Area region is expected to grow by 29 percent (5.3 million people to 6.8 million people), and by 60 percent from 2000 to 2040 (5.3 million people to 8.4 million people) (California Department of Forestry 1998). There will likely be many other development projects that occur during this timeframe due to increases in human population growth that will continue to impact the California red-legged frog.

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Numerous non-Federal activities continue to negatively impact the California red-legged frog in the action area. Habitats are lost or degraded as a result of urbanization, road and utility construction and maintenance, overgrazing, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development, may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respective Endangered Species Act.

Within this region of Contra Costa County, there is a continued demand for new housing. Considering this, the remaining open space in the vicinity of the State Route 4 project likely is threatened by development. The development of wildlife habitat will continue to result in the loss of not only breeding, resting, and foraging habitat, but the loss of dispersal corridors between breeding populations, thereby further isolating and fragmenting wildlife populations.

Mr. Gene Fong

16

CONCLUSION

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the State Route 4 Project is not likely to jeopardize the continued existence of this listed species. Critical habitat has been proposed for the California red-legged frog, however none is located in the action area, and therefore none will be affected by the proposed project.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the California Department of Transportation so they become binding conditions of project authorization for the exemption under 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity that is covered by this incidental take statement. If the California Department of Transportation (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because when this amphibian is not in their breeding ponds, it inhabits the burrows of ground squirrels or other rodents, or may be difficult to locate due to their cryptic appearance and behavior; the sub-adult and adult animals may be located a distance from the breeding ponds; the migrations occur on a limited period during rainy nights in the fall, winter, or spring; and the finding of an injured or dead individual is unlikely because of their relatively small body size. Losses of this species also may be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore, the Service is estimating that all California

Mr. Gene Fong

17

red-legged frogs inhabiting 2.62 acres (permanent effects = 1.42 acres of upland and 0.15 acre of aquatic habitat; temporary effects = 0.02 acre of aquatic habitat and 1.04 of upland habitat), based on the Biological Assessment, April 1, 2005, field meeting, the June 1, 2005, meeting with Caltrans, and the Addendum to the Biological Assessment will be subject to incidental take. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the State Route 4 Project in the form of harm, harassment, capture, injury, and death of the California red-legged frog caused by habitat loss and construction activities will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the California red-legged frog. Critical habitat for the California red-legged frog has been proposed, however none is located in the action area, and therefore will not be affected by the proposed project.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effects of the State Route 4 Project on the California red-legged frog:

1. Caltrans shall implement conservation measures for the California red-legged frog to minimize (1) the effects of the loss of habitat that will occur as a result of the project; (2) the potential for harassment, harm, injury, and mortality to this listed species; and (3) the potential for inadvertent capture or entrapment of federally listed wildlife species during construction activities.
2. Caltrans shall ensure their compliance with this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Federal Highway Administration shall ensure Caltrans complies with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

- A. The following Term and Conditions will implement Reasonable and Prudent Measure number one (1):

1. Caltrans shall minimize the potential for incidental take of the California red-legged frog resulting from project related activities by implementation of the conservation measures as described in the Biological Assessment, the Addendum to the Biological Assessment, and appearing in the *Project Description* of this biological opinion.

Mr. Gene Fong

18

2. Caltrans shall include Special Provisions that include the avoidance and minimization measures of this biological opinion in the solicitation for bid information. In addition, Caltrans will educate and inform contractors involved in the project as to the requirements of the biological opinion.
3. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and *Terms and Conditions* of this biological opinion and shall be the point of contact for the State Route 4 Project. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking at the project.
4. As described in the June 1, 2005, meeting with Caltrans, and the Addendum to the Biological Assessment, 2.84 acres of upland habitat and 0.4 acre of aquatic habitat for the California red-legged frog shall be permanently protected through (1) acquisition and management of appropriate off-site habitat, (2) purchase of an appropriate amount of credits at a Service-approved conservation bank; or (3) deposit of sufficient funds into a Caltrans account that will be used to purchase and manage appropriate habitat for the California red-legged frog as approved by the Service. The written approval of the Service shall be obtained by Caltrans prior to implementing the measure they have chosen for habitat compensation.
5. The Caltrans biologist shall have oversight over implementation of all the Terms and Conditions in this biological opinion, and shall have the authority to stop project activities, through communication with the Caltrans Resident Engineer, if any of the requirements associated with these Terms and Conditions are not being fulfilled. If biologist/construction liaison has requested a stop work due to take of any of the listed species the Service and the California Department of Fish and Game will be notified within one (1) working day via email or telephone.
6. Permanent and temporary construction disturbances and other types of project-related disturbance to California red-legged frog habitat shall be minimized to the maximum extent practicable. To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas also should be included in preconstruction surveys and, to the maximum extent possible, should be established in locations disturbed by previous activities to prevent further adverse effects.
7. Project employees shall be provided with written guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.
8. Prior to initiation of ground breaking, the Caltrans or a Service-approved biologist will conduct an education and training session for all construction personnel. All individuals who will be involved in the site preparation or construction shall be present, including the project representative(s) responsible for reporting take to

Mr. Gene Fong

19

the Service and the California Department of Fish and Game. Training sessions shall be repeated for all new employees before they access the project site. Sign up sheets identifying attendees and the contractor/company they represent shall be provided to the Service with the post-construction compliance report. At a minimum, the training shall include a description of the natural history of the California red-legged frog affected by the State Route 4 Project and include information on this listed species and its habitats. The training shall include the general measures that are being implemented to conserve this species as they relate to the project, the penalties for non-compliance, and the boundaries (work area) of the project. To ensure that employees and contractors understand their roles and responsibilities, training shall be conducted in languages other than English, as appropriate.

9. A litter control program shall be instituted at the State Route 4 project. All workers ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers shall be removed from the project area at the end of each working day.
10. All construction activity shall be confined within the State Route 4 project site, which may include temporary access roads, haul roads, and staging areas specifically designated and marked for these purposes, as described in Term and Condition 13 below. At no time shall equipment or personnel be allowed to adversely affect areas containing suitable California red-legged frog habitat outside the project site without authorization from the Service.
11. All grindings and asphaltic-concrete waste shall be stored within previously disturbed areas absent of habitat and at a minimum of 150 feet from any culvert, or stream.
12. As described at the June 1, 2005, meeting, Caltrans shall submit to the Service their draft proposal for the restoration of the 1.04 acre of California red-legged frog upland habitat that will be temporarily affected by the proposed project at least sixty (60) calendar days prior to initial ground breaking at the State Route 4 project; the final plan shall be submitted for approval by the Service prior to ground breaking at the proposed project. The plan shall include restoration and revegetation work associated with temporary effects using native California plant species from on-site or local sources (i.e., local ecotype). Plant materials from non-local sources shall be allowed only with written authorization from the Service. To the maximum extent practicable (i.e., presence of natural lands), topsoil shall be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion shall be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of listed animal species. The draft and final plan shall contain specific quantifiable criteria to evaluate the success of the restoration.

Mr. Gene Fong

20

13. The State Route 4 Project construction area shall be delineated with high visibility temporary fencing at least four (4) feet in height, flagging, or other barrier to prevent encroachment of construction personnel and equipment onto any sensitive areas during project work activities. Such fencing shall be inspected and maintained daily until completion of the project. The fencing will be removed only when all construction equipment is removed from the site. Actions within the project area shall be limited to vehicle and equipment operation on existing roads. No project activities will occur outside the delineated project construction area.
14. Prior to any ground disturbance, pre-construction surveys shall be conducted by a Service-approved biologist for the California red-legged frog. These surveys shall consist of walking surveys of the project limits and adjacent areas accessible to the public to determine presence of the species.
15. Only Service-approved biologist(s) who are familiar with the biology and ecology of the California red-legged frog shall capture or handle this listed species.
16. Maintenance and construction excavations greater than two (2) feet deep either shall be covered or filled in at the end of each working day. The trench or pit shall be surveyed in the morning and late afternoon hours to ascertain whether a California red-legged frog has fallen into the trench or pit. If at anytime, a trapped California red-legged frog is discovered trapped in a trench or pit, the animal shall be carefully captured by a Service-approved biologist and released at a Service-approved location which contains suitable habitat and is outside of the construction area. The Service shall be notified by telephone and electronic mail within one (1) working day of the incident.
17. Tightly woven fiber netting or similar material shall be used for erosion control or other purposes at the State Route 4 Project site to ensure that a California red-legged frog does not get trapped. Plastic mono-filament netting shall not be used at the project site. This limitation will be communicated to the contractor through use of Special Provisions included in the bid solicitation package.
18. The following Term and Condition shall be implemented for borrow sites associated with the State Route 4 Project:
 - a. Caltrans shall require as part of the construction contract that all contractors comply with the Act in the performance of the work necessary for project completion performed inside and outside the project right-of-way.
 - b. Caltrans shall require documentation from the contractor that aggregate, fill, or borrow material provided for each project was obtained in

Mr. Gene Fong

21

compliance with the Act. Evidence of compliance with the Act shall be demonstrated by providing the Resident Engineer any one of the following:

- i. a letter from the Service stating use of the borrow pit area will not result in the incidental take of listed species;
 - ii. an incidental take permit for contractor-related activities issued by the Service pursuant to section 10(a)(1)(B) of the Act;
 - iii. a biological opinion or a letter concurring with a "not likely to adversely affect" determination issued by the Service to the Federal agency having jurisdiction over contractor-related activities;
 - iv. letter from the Service concurring with the "no effect" determination for contractor-related activities; or
 - v. Contractor submittal of information to the Caltrans Resident Engineer indicating compliance with the State Mining and Reclamation Act (SMARA) and provide the County of Contra Costa land use permits and California Quality Act (CEQA) clearance.
- c. If a borrow site that is in compliance with the Act is not available, Caltrans shall either:
- i. identify/select a site that the Service has concurred with the "no effect" determination, or;
 - ii. request reinitiation of formal consultation on the action considered herein based on new information.

B. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):

1. If requested, during or upon completion of construction activities, the on-site biologist, and/or a representative from Caltrans shall accompany Service or California Department of Fish and Game personnel on an on-site inspection of the site to review project effects to the California red-legged frog and its habitat.
2. The Federal Highway Administration shall ensure Caltrans complies with the *Reporting Requirements* of this biological opinion.

Reporting Requirements

Injured California red-legged frogs must be cared for by a licensed veterinarian or other qualified Service-approved person; dead individuals of this listed species must be preserved according to standard museum techniques and held in a secure location. The Service and the California Department of Fish and Game must be notified within one (1) working day of the discovery of death or injury to a California red-legged frog that occurs due to project related activities or is observed at the project site. Notification must include the date, time, and location of the incident

Mr. Gene Fong

22

or of the finding of a dead or injured animal clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. The Service contacts are Chris Nagano, Chief of the Endangered Species Division at the Sacramento Fish and Wildlife Office (916/414-6600), and Scott Heard, Resident Agent-in-Charge of the Service's Law Enforcement Division at 916/414-6660.

Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within sixty (60) calendar days of the date of the completion of construction activity. This report shall detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the California red-legged frog, if any; (v) occurrences of incidental take of this listed species, if any; and (vi) other pertinent information.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to implement recovery actions, to help implement recovery plans, to develop information, or otherwise further the purposes of the Act.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. We propose the following conservation recommendations:

1. Caltrans should assist the Service in implementing recovery actions identified in the *Recovery Plan for the California red-legged Frog* (U.S. Fish and Wildlife Service 2002).
2. Caltrans should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage by California red-legged frogs, other listed animals, and wildlife. Caltrans should include photographs, plans, and other information in their biological assessments if they incorporate "wildlife friendly" crossings into their projects.
3. The Federal Highway Administration and Caltrans should consider participating in the planning for a regional habitat conservation plan for the California red-legged frog, other listed species, and sensitive species.
4. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog, and other appropriate species. Such banking systems also could possibly be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate.
5. Sightings of any listed or sensitive animal species should be reported to the California

Mr. Gene Fong

23

Natural Diversity Database of the California Department of Fish and Game. A copy of the reporting form and a topographic map clearly marked with the location the animals were observed also should be provided to the Service.

6. Caltrans should provide habitat for bats, including surfaces for bat roosts on the underside of bridges and other structures whenever possible.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 4 (east) widening from Loveridge Road to State Route 160 in Contra Costa County, California. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion on the State Route 4 Project, please contact the Chief of our Endangered Species Division at the letterhead address or at telephone 916/414-6600.

Sincerely,



for Cay C. Goude
Acting Field Supervisor

cc:

Susan Chang California Department of Transportation, Oakland, California
Dee Warenycia, California Department of Fish and Game, Sacramento, California
Janice Gan, California Department of Fish and Game, Yountville, California
Carl Wilcox, California Department of Fish and Game, Yountville, California
Scott Wilson, California Department of Fish and Game, Yountville, California
Warden Nicole Kozicki, California Department of Fish and Game, Yountville, California

Mr. Gene Fong

24

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26

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28

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Mr. Gene Fong

30

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